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UDC 533.915

GABOVICH, M. D., STAKHIK, P. D., and SEMENYUK, V. F., Institute of Physics of the Academy of Sciences UkrSSR, Kiev

"Propagation of a Plasma Flux by a Magnetic Field up to 100 koe"

Kiev, Ukrainskiy Fizicheskiy Zhurnal, Vol 17, No 3, Mar 72, pp 353-355

Abstract: The broadening over a length of 120 mm of helium and argon plasma fluxes 1 mm in diameter and $n \leq 5 \times 10^{12} cm^{-3}$ was experimentally investigated. The plasma flowed out from a discharge spacing between the glowing cathode and the anode through an opening of 1 mm in diameter in the latter into the vacuum region along a magnetic field up to 100 koe. Disturbances resulting from the propagation velocity of ion flow caused the ion plasma component to propagate in an 80-koe magnetic field with the velocity of $v_i \approx 10^6$ cm/sec. by discharge in helium and with $v_i \leq 5 \times 10^5 cm/sec.$ by discharge in argon. In this way, a $3 \times 10^{12} cm^{-3}$-helium-plasma concentration and an $8 \times 10^{12} cm^{-3}$-argon-plasma concentration were determined. In the $H \geq 40$-koe magnetic field, the outgoing flux of ions was found to concentrate in a ~ 1 deg. cone apex angle. In magnetic fields of maximum intensity, the plasma propagates practically without broadening. The results of experiments demonstrated the possibility of the effective plasma propagation by a magnetic field magnetizing the ions. Three illustr., five biblio. refs.

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USSR UDC 533.9:538.561

GABOVICH, M. D., SOLOSHENKO, I. A., PROTSENKO, I. M., TOVMACHENKO, V. N., and KOLOCHKO, V. N.

"Low-Frequency Oscillations in Plasma Formed by an Ion Beam"

Minsk, Kolebaniya i Volny v Plazme. (Oscillations and Waves in a Plasma), "Nauka i Tekhnika," 1971, pp 61-64

Abstract: In a plasma formed by an ion beam, passing through a neutral gas along the magnetic field, the mean energy of the ions is higher than in ordinary gas discharges, comprising approximately 1 eV. The authors examine the case in which the plasma was formed by an ion beam having an energy of approximately 20 keV and a current of about 1 mA. They discuss the investigation carried out on the excitation of ion-cyclotron oscillations in plasma formed by a cylindrical beam; they are also concerned with the investigation of oscillations at lower frequencies in the plasma of a tubular ion beam. On the basis of the data which they obtained, the authors come to the conclusion that the instability generated in the heterogeneous plasma is largely due to the existence of a radial electric field crossed with a longitudinal magnetic field. The article contains 2 illustrations and 6 bibliographic entries.
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GABOVICH, M. D., SOLOSHENKO, I. A.

"Perturbation of Ion Cyclotron Oscillations in a Plasma Formed by an Ion Beam"

Leningrad, Journal of Technical Physics, February 1970, pp 254-258

Abstract: The paper deals with the perturbation of oscillations on an ion cyclotron frequency and its harmonics in a plasma formed by an ion beam passing along a magnetic field through a neutral gas. It is shown that the observed oscillations are purely azimuthal waves with mode m = 1, such that the direction of propagation coincides with the direction of the Larmor precession. A radial electrical field directed towards the center of the beam stabilizes the oscillations; a field of the reverse sign leads to an increase in the amplitude of the oscillations. The possibility of stabilization by an electrical field in the case of low-frequency oscillations ($\omega < \omega_{ii}$ where $\omega_{ii} = \omega_{ii}$ is the ion cyclotron frequency) is indicated by several authors in previous works (B. B. Kadomtsev, Yaderniy Sintez, 1, 286, 1961; A. V. Timofeyev, Yadernıy Sintez, 6, 93, 1966; and Yu. N. Dnestrovskiy and D. P. Kostomarov, DAN SSSR, 167, 1032, 1966).

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GABOVICH, M. D., SOLOSHENKO, I. A., Journal of Technical Physics, February 1970, pp 254-258

The authors express their thanks to E. A. Pashchitskiy and V. N. Orayevskiy for their useful discussion of the results.

The article includes 7 figures. There are 7 bibliographic references.

1/2 038 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--LOW FREQUENCY INSTABILITY OF AN INHOMOGENEOUS PLASMA FORMED BY A TUBULAR ION BEAM -U-

AUTHOR-(04)-GABOVICH, M.D., PROTSENKO, I.M., TOVMACHENKO, V.M., KOLOCHKO, V.M.

COUNTRY OF INFO--USSR

SOURCE--UKRAINS'KII FIZICHNII ZHURNAL, VOL. 15, APR. 1970, P. 648.

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--LOW FREQUENCY, BEAM PLASMA INSTABILITY, INHOMOGENEOUS PLASMA, MAGNETIC FIELD, NATURAL GAS, LOW FREQUENCY OSCILLATION, ELECTRIC FIELD

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0719 STEP NO--UR/0185/70/015/000/0648/0648

CIRC ACCESSION NO--AP0126431

UNCLASSIFIED

2/2 038 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0126431

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL RESULTS FOR THE LOW FREQUENCY INSTABILITY OF A PLASMA FORMED BY A TUBULAR ION BEAM WHICH TRAVELS ALONG A MAGNETIC FIELD THROUGH THE NATURAL GAS. A CHARACTERISTIC FEATURE OF THIS PLASMA IS THAT IT HAS INTERNAL AND EXTERNAL BOUNDARIES WITH MUTUALLY OPPOSED DENSITY GRADIENTS ALONG THE RADIUS AND AN UNCHANGED ORIENTATION OF THE ELECTRIC FIELD ARISING FROM INCOMPLETE COMPENSATION OF THE ION BEAM'S SPACE CHARGE. LOW FREQUENCY OSCILLATIONS ARE DETECTED IN THE PLASMA, WITH THE AMPLITUDE MAXIMA LOCALIZED IN REGIONS OF BOTH THE POSITIVE AND NEGATIVE RADIAL DENSITY GRADIENTS. THE RESULTS OBTAINED ARE IN AGREEMENT WITH THE THEORY FOR THE STABILITY OF AN INHOMOGENEOUS PLASMA IN CROSSED ELECTRIC AND MAGNETIC FIELDS. FACILITY: AKADEMIIA NAUK UKRAINS'KOI RSR, INSTITUT FIZIKI, KIEV, UKRAINIAN SSR.

UNCLASSIFIED

1/2 026 UNCLASSIFIED PROCESSING DATE--09OCT70

TITLE--EXCITATION OF ION CYCLOTRON OSCILLATIONS IN A PLASMA FORMED BY AN ION BEAM -U-

AUTHOR-(02)-GABOVICH, M.D., SOLOSHENKO, I.A.

COUNTRY OF INFO--USSR

SOURCE--ZHURNAL TEKHNICHESKOI FIZIKI, VOL. 40, FEB. 1970, P. 254-258

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--ION BEAM, CYCLOTRON FREQUENCY, PLASMA OSCILLATION, ELECTRIC FIELD, PLASMA STABILITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1978/1506 STEP NO--UR/0057/70/040/000/0254/0258

CIRC ACCESSION NO--AP0046345

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--090CT70

CIRC ACCESSION NO--AP0046345

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. EXPERIMENTAL INVESTIGATION SHOWING THAT OSCILLATIONS AT THE ION CYCLOTRON FREQUENCY AND ITS HARMONICS CAN BE EXCITED IN A PLASMA FORMED BY AN ION BEAM MADE TO PASS THROUGH THE NEUTRAL GAS ALONG A MAGNETIC FIELD. IT IS SHOWN THAT THE OSCILLATIONS OBSERVED ARE PURELY AZIMUTHAL WAVES OF THE MODE M EQUALS 1, PROPAGATING IN THE SAME DIRECTION AS THE ION LARMOR DRIFT. THE OSCILLATIONS CAN BE STABILIZED BY A RADIAL ELECTRIC FIELD DIRECTED TOWARD THE CENTER OF THE BEAM.

UNCLASSIFIED

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UDC 613(075.8)

GABOVICH, R. D., POZNANSKIY, S. S., and SHAKHBAZYAN, G. Kh. Gigiyena (Hygiene)

Moscow, "Meditsina," 1971, 432 pp

Translation: Annotation: The second edition of this textbook has been considerably reworked and supplemented with new achievements in the development of the science of hygiene.

It is intended for students in the treatment and pediatrics schools of medical institutes.

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., et al., "Meditsina" 1971, 432 pp

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GABOVICH, R. D., Professor, Chairman, Review Commission, Ukrainian Scientific Society of Hygienists, and Head, Chair of General Hygiene, Kiev Medical Institute (Reviewer)

Faktory vneshney sredy i ikh znacheniye dlya zdorov'ya naseleniya (Environmental Factors and Their Role in Health), No 1, Kiev, "Zdorov'ya", 1969, 188 pp

Kiev, Vrachebnoye Delo, No 8, Aug 70, p 155

Translation: The first number of the new republic interdepartmental collection deals with pressing problems in communal and industrial hygiene, planning of preventive nutrition for workers in the chemical industry, and so forth. The first article in the collection is by M. N. Mel'nik, Deputy Minister of Health of the Ukrainian SSR, who discusses the activity of the health agencies and scientific research institutes of sanitation and hygiene for public services and protection of open bodies of water and the air. He also outlines the tasks at hand in this field. A. V. Pavlov, Chief of the Main Administration for Sanitation and Epidemiology, Ukrainian SSR, defines the main tasks facing hygiene and health agencies in improving the quality of medical care and protecting the people's health. A substantial part of the work is devoted to matters pertaining to the water supply and protection of water resources. Data are provided which provide the hygiene basis for the maximum permissible concentrations of injurious substances in bodies

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GABOVICH, R. D., Vrachebnoye Delo, No 8, Aug 70, p 155

of water from the hygienic standpoing (A. K. Bekker, M. M. Ratpan, Kh. Sh. Al'meyev and V. Ye. Karmazin, and others). Their studies on the sanitary and toxicological characteristics of injurious substances are highly interesting. The variety and novelty of the methods used by these investigators are evidence of the progress made by the science of hygiene in this field. An emphasis on practical matters is seen in the works of P. G. Chumalo on effective methods for purifying mine water before it is released into a body of open water; Ye. I. Goncharuk, who devised a method for disinfecting the sewage of small hospitals for infectious diseases in underground filtration stages; N. N. Sakhnovskaya, who studied pollution of atmospheric air by the emissions of a large metallurgical chemical plant; and Kh. V. Storoshchuk, who discovered that the intensity of street noise in L'vov has increased by 10 to 15 db during the past 10 years and also offers a set of recommendations on how to lower the noise level. The findings of Prof. I. P. Barchenko and S. G. Vasiliu, who studied the effect of certain food additives on the body, as well as the research of A. I. Stolmakova et al, on vitamin supplements in the diet of workers in the potash industry, should be put to practical use. Several of the reports were concerned with endemic goiter in the mountain regions of the western oblasts of the Ukraine (Prof. E. S. Turotskaya, L. I.

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GABOVICH, R. D., Vrachebnoye Delo, No 8, Aug 70, p 155

Ladanivskiy, Ya. G. Boris, V. A. Plastunov, I. I. Shvayko, and others) and protection of the environment in connection with chemicals used in agriculture and the widespread use of chemicals for plant protection (G. V. Gracheva, V. M. Bolkhovityanova, M. I. Gzhegotskiy, and others). The effect on the body of various industrial factors (physical and mental stress, noise, sulfur and potash dusts, carbon monoxide, nitrogen, and so forth) was discussed in the interesting reports of G. T. Chukmasova, N. S. Loboyko, B. M. Shtabskiy, and others. The collection examines a wide range of subjects in hygiene and for that reason will undoubtedly be of great scientific and practical interest to hygienists, public health toxicologists, and scientists in allied fields. The collection was very carefully edited, making it possible to present a great deal of material in a comparatively small book. In conclusion, we hope that those in charge of the collection, the staff of the L'vov Research Institute of Epidemiology and Microbiology, will narrow the scope of forthcoming numbers somewhat, restricting them to hygienic problems of timely concern to the western oblasts of the Ukraine and to the chemical industry.

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1/2 031 UNCLASSIFIED PROCESSING DATE--11SEP70

TITLE--A STUDY OF THE ACTION OF FLOURINE IN THE DRINKING WATER IN A SANITARY GERONTOLOGICAL TEST -U-

AUTHOR--GABOVICH, R.D., TSIPRIYAN, V.I.

COUNTRY OF INFO--USSR

SOURCE--GIGIYENA I SANITARIYA, 1970, NR 4, PP 34-40

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--FLUORINE, GERONTOLOGY, METABOLISM, WATER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1985/1681 STEP NO--UR/0240/70/000/004/0034/0040

CIRC ACCESSION NO--AP0101736

UNCLASSIFIED

2/2 031 UNCLASSIFIED PROCESSING DATE--11SEP70

CIRC ACCESSION NO--AP0101736

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PAPER PRESENTS DATA ON THE EFFECT OF FLUORINE IN THE DRINKING WATER ON THE PROCESSES OF PHYSIOLOGICAL AGING IN AN EXPERIMENT LASTING FOR 24 MONTHS. THE EXPERIMENT WAS CARRIED OUT ON ANIMALS OF THREE DIFFERENT AGE GROUPS: THE RATS OF THE FIRST (CONTROL) GROUP DRANK TAP WATER CONTAINING 0.3 MG-L OF FLUORINE IN THE COURSE OF ALL THE EXPERIMENT; THE SECOND GROUP DRANK TAP WATER FLUORINATED UP TO A CONCENTRATION OF 1.2 MG-L AND THE THIRD GROUP DRANK WATER CONTAINING 15 MG-L OF FLUORINE. THE AUTHORS USED A GREAT NUMBER OF TESTS WHEREBY IT WAS POSSIBLE TO ASSESS THE STATE OF THE MAIN LINKS IN PROCESSES REGULATING THE METABOLISM AND BODY FUNCTIONS. ON THE BASIS OF THE RESULTS OBTAINED IT WAS CONCLUDED THAT IN THE COURSE OF AGING OF THE FIRST GROUP IRREGULAR CHANGES WERE NOTED IN VARIOUS LINKS OF THE SYSTEMS REGULATING THE METABOLISM OF BODY FUNCTIONS. SIMILAR CHANGES WERE NOTED AS WELL AMONG THE ANIMALS OF THE SECOND GROUP. THE ANIMALS THAT DRANK WATER CONTAINING 15 MG-L OF FLUORINE PRESENTED SIGNS OF FLUOROSIS AND PRONOUNCED CHANGES IN THE MORPHOLOGY AND FUNCTIONING OF MANY ORGANS.

UNCLASSIFIED

USSR

UDC: 51

GABOVICH, Ye., CHIZH, A., YALAS, A.

"On the Traveling Salesman Problem in Restricted Areas"

Tr. Vychisl. tsentra. Tartus. un-t (Works of the Computing Center. Tartu University), 1971, vyp. 22, pp 3-24 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V412)

Translation: It is known that the classical problem of the traveling salesman (TS) is a problem in selecting the shortest circuit t passing through n cities (for which the distance matrix $\|c_{ij}\|$ is given). The following generalization of the problem is considered. Let $t = (t_1, t_2, \ldots, t_n)$ be some circuit. Let us call the number

$$w(t) = \max \{c_{t_1 t_2}, c_{t_2 t_3}, \ldots, c_{t_{n-1} t_n}, c_{t_n t_1}\}.$$

the width of the circuit t. The problem of finding the circuit of optimum width is called by the authors the problem of the traveling salesman in restricted areas (TSRA) with matrix $\|c_{ij}\|$. The TSRA is the same kind of natural generalization of the conventional traveling salesman problem as the problem of assignments to restricted areas (see for instance RZh-Mat

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GABOVICH, Ye. et al., Tr. Vychisl. tsentra Tartus. un-t, 1971, vyp. 22, pp 3-24

1966, 11V249K) is for the conventional assignment problem. The TSRA was first formulated and solved in one special case in a paper by Gilmore and Gomori (RZh-Mat, 1964, 11V262). In a doctoral dissertation, D. Shapiro (RZh-Mat, 1968, 1V422D) proposed an exact method (of the "branches and boundaries" type) suitable for solving both the TS and the TSRA. The maximum number of cities is n = 70 for TSRA problems solved by this method.

The TSRA arises, for instance, in considering the following problem of planning the route for a cycle race. It is known that the route must pass through n preselected cities. It is established for any two cities by which road the cyclists are to travel from the first city to the second (if the route is to be marked out in this order), and by which road they are to travel from the second city to the first (obviously these two paths may be of different lengths). It is required to route the race in such a way that the longest stage will be as short as possible.

A certain method is proposed in § 1 for solving the TSRA. The method is not completely formalized and is intended for solving the TSRA manually (rather than by computer). The authors note that complete formalization of

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GABOVICH, Ye. et al., Tr. Vychisl. tsentra. Tartus. un-t, 1971, vyp. 22, pp 3-24

the proposed method (probably feasible in principle) is apparently very cumbersome and is scarcely advisable. In § 2 the method is applied to various TSRA problems defined by distance matrices directly known from the literature on the traveling salesman problem. In § 3 a solution is given for six TSRA problems whose matrices are different random-number matrices. The number of cities for the largest matrix is $n = 100$. A certain degree of success is attained in this paper due to 1) utilization of certain advantages of a human operator over a computer (informal thinking); 2) the specific nature of the method which enables almost arbitrary plotting of a path repeatedly beyond a certain point in time. In the final analysis, the authors' experiment shows that the TSRA is accessible to manual solution in the case of fairly large problems. The time of solution for $n \leq 57$ varies from a half hour to several hours if the time for preparation of initial data is not taken into account. A problem for $n = 100$ was solved manually in less than 10 hours. Yu. Finkel'shteyn.

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USSR UDC: 620.193.5

BYKOV, V. N., RUDENKO, V. A., and GABRIANOVICH, D. V.

"Effect of PbO on the Oxidation of 1Kh13 Steel"

Moscow, Zashchita Metallov, Vol. 6, no. 4, Jul-Aug 70, pp 455-456

Abstract: The well-known effect of the catastrophic oxidation of stainless steel is generally observed when the metal is alloyed with elements whose oxides are of the low-melting type (MoO_3, V_2O_5, PbO) or when its surface is contacting similar oxides or salts. This study concerns the kinetics of oxidation of 1Kh13 steel at 800--1000°C, its structure, and phase composition of the oxide films formed in the presence of lead oxide. The films show areas with a peculiar geometry corresponding to the phase of lead ferrite $Pb \cdot 5Fe_2O_3$. The amount and size of such areas depends on temperature, oxidation time, and amount of lead oxide vapors in the oxidizing atmosphere. The oxide film on 1Kh13 steel oxidized in air at 800°C is composed of spinel $(Fe, Cr)_3O_4$ at 1000°C and a small amount of metal oxide (Me_2O_3). In the presence of PbO the ratio of these phases in the film varies: $Pb \cdot 5Fe_2O_3$ and Me_2O_3 (α-Fe_2O_3)

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BYKOV, V. N., et al, Zashchita Metallov, Vol. 6, no. 4, Jul-Aug 70, pp 455-456

are predominant. In such a manner, lead oxide promotes the formation of phases containing metallic ions of a high valence. Phase α-Fe_2O_3 is classed with n-type semiconductors with disorder in the anion sublattice. In accordance with Hauffe's rule of valence, introducing an element with a lower valence (Pb^{2+}) in the lattice of such an oxide will increase the concentration of anion vacancies and, consequently, the oxidation rate. In the process of oxidation of 1Kh13 steel in a medium containing PbO vapors (or in contact of PbO with the steel's surface), the adsorption rate of PbO from the gaseous phase may exceed the dissolution rate of lead ions in the lattice of the oxide.

USSR

GABRIELYAN, D. I.

"Precision Alloys (Metallurgy and Properties)

Pretsizionnyye splavy (Metallurgiya i svoystva) (English version above), Metallurgiya Press, Moscow, 1972, 104 pp

Translation of Foreward: Hundreds of steels and alloys are known to metallurgy, distinguished by outstanding service characteristics. Among these, the precision alloys, due to the high level of their physical properties, form a special group. This group includes magnetically soft and hard alloys, alloys with special thermal and elastic properties, alloys with fixed electrical resistance, superconducting alloys, as well as alloys having a combination of various physical properties.

In our country, the production of precision alloys was organized at the beginning of the second world war. Research work was concentrated at a specialized institute and production was concentrated at plants producing high-quality special steels. The creation of the domestic production of precision alloys was greatly facilitated by the personal efforts of I. F. Tevosyan.

Most precision alloys are alloys of iron, cobalt, and nickel. The metal systems based on these elements have been broadly studied, but, due to the use

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GABRIELYAN, D. I., Pretsizionnyye splavy, metallurgiya Press, Moscow, 1972, 104 pp

of new methods and equipment for their study, new alloys are being continually sought out in these systems with high properties, and further improvement of alloys created earlier is being achieved.

As the requirements for products having high physical properties have grown, it has become necessary to use manganese, chromium, titanium, niobium, vanadium, and the rare earth metals as bases for precision alloys.

The directives of the 24th CPSU Congress for the 5-year plan for the development of the national economy of the USSR, 1971-1975, call for a significant growth in the branches of the national economy using precision alloys. For example, applied cybernetics is to be used for broader application of mathematical methods and electronic computers to achieve overall automation of production and control processes. The achievements of physics are to be used to improve methods of conversion of energy and assure progress in the area of electronics, radio engineering, and space equipment. The areas of application of precision alloys in domestic technology are being significantly expanded -- further broad development of telephone, radio, and television systems; the growth of the volume of production and further improvement of the quality of domestic apparatus (television sets, refrigerators, and other devices) are planned.

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Gabrielyan, D. I., Pretsizionnyye splavy, Metallurgiya Press, Moscow, 1972, 104 pp.

The significance of the metallurgy of precision alloys as branches determining the progress of instrument building in many areas of new technology will increase from year to year, and the prospects for its development cannot be overestimated.

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Gabrielyan, D. I., Pretsizionnyye splavy, Metallurgiya Press, Moscow, 1972, 104 pp.

1/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--THE INTERACTION OF THE ACRIDINE DYES WITH DNA IN SOLUTION AND INSIDE PHAGE PARTICLE -U-

AUTHOR-(04)-GABRILOVICH, I.N., ROMANOVSKAYA, L.N., ZENCHENKO, S.A., REZNIKOV, I.V.

COUNTRY OF INFO--USSR

SOURCE--MOLEKULYARNAYA BIOLOGIYA, 1970, VOL 4, NR 3, PP 324-330

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BIOLOGIC STAIN, PHAGE, DNA

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1999/0398 STEP NO--UR/0463/70/004/003/0324/0330

CIRC ACCESSION NO--AP0122578

UNCLASSIFIED

2/2 016 UNCLASSIFIED PROCESSING DATE--23OCT70

CIRC ACCESSION NO--AP0122578

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE ABSORPTION AND THE LUMINESCENCE SPECTRA HAVE BEEN STUDIED OF THE COMPLEXES OF ACRIDINE ORANGE, ACRIDINE YELLOW, TRYPAFLAVINE AND RIVANOLE WITH THREE SAMPLES OF THE NATIVE AND DENATURED DNA OF DIFFERENT BASE COMPOSITION. ACRIDINE ORANGE, ACRIDINE YELLOW AND TRYPAFLAVINE ARE SHOWN TO INTERACT WITH NATIVE AND DENATURED DNA IN A DIFFERENT WAY. ACRIDINE YELLOW AND TRYPAFLAVINE INTERACT PREFERENTIALLY WITH ADENINE AND THYMINE OF DNA. ACRIDINE YELLOW, RIVANOLE AND TRYPAFLAVINE ARE CAPABLE TO PENETRATE THE PARTICLES OF T2 AND L1 PHAGES AND FORM THE COMPLEXES WITH THE PHAGE DNA, WHEREAS ACRIDINE ORANGE PENETRATES ONLY THE L1 PHAGE PARTICLES. TRYPAFLAVINE INTERACTS BOTH WITH PHAGE DNA AND PHAGE PROTEIN. FACILITY: BYELORUSSIAN STATE UNIVERSITY, USSR, MINSK.

UNCLASSIFIED

1/2 021 UNCLASSIFIED PROCESSING DATE--16OCT70
TITLE--INVESTIGATION OF EFFECT OF NORADRENALIN ON THE BRAIN BLOOD FLOW EMPLOYING RADIOACTIVE GAS KR PRIME8 -U-
AUTHOR-(02)-HARPER, A.M., GABRIYELYAN, E.S.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 69, NR 5, PP 59-62
DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NORADRENALIN, DOG, KRYPTON, BLOOD CIRCULATION, BRAIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1998/0213 STEP NO--UR/0219/70/069/005/0059/0062

CIRC ACCESSION NO--AP0120911
UNCLASSIFIED

2/2 021 UNCLASSIFIED PROCESSING DATE--16OCT70
CIRC ACCESSION NO--AP0120911
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AS EVIDENCED FROM EXPERIMENTS ON DOGS, INTRAVENOUS INFUSION OF NORADRENALIN DOES NOT INFLUENCE ESSENTIALLY THE REGIONAL BRAIN BLOOD FLOW. NOTWITHSTANDING THE MARKED INCREASE IN THE RESISTANCE OF BRAIN VESSELS, BLOOD VOLUME REMAINS CONSTANT BECAUSE OF SIMULTANEOUS INCREASE OF THE MEAN ARTERIAL PRESSURE. WHEN ADMINISTERED INTO THE BRAIN VESSELS DIRECTLY, NORADRENALIN MARKEDLY LESSENS THE BRAIN BLOOD FLOW. FACILITY: WELLCOME SURGICAL RESEARCH LABORATORY, UNIVERSITY OF GLASGOW. FACILITY: DEPARTMENT OF PHARMACOLOGY, YEREVAN MEDICAL INSTITUTE.

APPROVED FOR RELEASE: 09/17/2001 CIA-RDP86-00513R002200820018-8"

USSR

UDC 615.5

MIRZOYAN, S. A., GABRIYELYAN, E. S., and AMROYAN, E. A., Yerevan Medical Institute

"Study of the Effect of Gangleron and Quateleron on Various Physicochemical Properties of Arterial Blood"

Yerevan, Doklady Akademii Nauk Armyanskoy SSR, No 3, 1970, pp 182-186

Abstract: The effect of the title compounds on the acid-base equilibrium in the arterial blood of cats was studied. It was previously shown that these compounds can change the circulation level in the cerebrum. Twenty-five cats were studied under anesthesia. A fine polyethylene catheter was inserted into the carotid artery for removal of blood samples. The compounds under investigation were introduced through the femoral vein. The pH and CO_2 pressure of the arterial blood were monitored by electrodes. It was found that gangleron in an amount of 1 mg/kg increases the CO_2 pressure in arterial blood within 10 min of introduction. The pH of the blood is changed, also, but other properties are not significantly changed. Intravenous administration of quateleron in a dose of 0.5 mg/kg also brings about a significant change in the CO_2 pressure of the arterial blood (from 33.70 ± 0.95 in controls to 38.56 ± 1.64 mm Hg). Also the pH of the blood is affected. In contrast to the case of gangleron, the pO_2 is somewhat changed.

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USSR

GOLUBEVA, T. B., et al, Zhurnal Evolyutsionnoy Biokhimii i Fiziologii, Vol 6, No 2, Mar/Apr 70, pp 215-224

and to their mode of life. Use of signals in the optimum, rather than non-optimum, sensitivity range of frequencies affected significantly the effects of the intensity and sharpness of increase in sound signals on the response. The cycles of restoration of the first component of the nerve response in paired signals were shorter in owls than in chickens, but longer than in cats. Owls occupied an intermediate place between mammals and other birds in this respect.

1/2 022 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--EFFECT OF NORADRENALIN ON THE REGIONAL BRAIN BLOOD FLOW DEPENDING ON THE INITIAL STATE OF MIDDLE ARTERIAL PRESSURE -U-

AUTHOR-(02)-GABRIYELYAN, E.S., GARPER, A.M.

COUNTRY OF INFO--USSR

SOURCE--BYULLETEN' EKSPERIMENTAL'NOY BIOLOGII I MEDITSINY, 1970, VOL 49, NR 6, PP 9-11

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--BRAIN, BLOOD CIRCULATION, BLOOD PRESSURE, NOREPINEPHRINE, KRYPTON ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3004/0712 STEP NO--UR/0219/70/049/006/0009/0011

CIRC ACCESSION NO--AP0131311

UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0131311
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AS EVIDENCED FROM MEASURING THE BRAIN BLOOD FLOW IN DOGS EMPLOYING KR PRIME 85 DURING MILD HYPOTENSION, INFUSION OF NORADRENALIN LESSENS THE BRAIN BLOOD FLOW, PROVIDING THE LATTER BEING NORMAL. UNDER HEAVY HYPOTENSION, DUE TO DISTRUBANCES IN AUTOREGULATION OF THE BRAIN BLOOD FLOW, INFUSION OF NORADRENALIN IS FOLLOWED BY AN INCRESE IN THE REGIONAL BRAIN BLOOD FLOW.
FACILITY: DEPARTMENT OF PHARMACOLOGY, YEREVAN MEDICAL INSTITUTE; AND WELLCOME SURGICAL RESEARCH LABORATORY, UNIVERSITY OF GLASGOW.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--13NOV70
TITLE--THIOAMIDATION OF POLYACRYLONITRILE -U-

AUTHOR-(04)-LEVITES, L.M., GABRIYELYAN, G.A., KUDRYAVTSEV, G I., ROGOVIN, Z.A.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN., SER. B 1970, 12(4), 309-13

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--ACRYLONITRILE, CHEMICAL REACTION RATE, COPOLYMERIZATION, THIOL, AMIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/1241 STEP NO--UR/0460/70/012/004/0309/0313

CIRC ACCESSION NO--AP0134915

UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--13NOV70
CIRC ACCESSION NO--AP0134915
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. REACTIONS OF POLYACRYLONITRILE WITH H SUB2 S IN HCONME SUB2 OR IN ME SUB2 SO IN THE PRESENCE OF NH SUB4 SH, ME SUB2 NH, ET SUB3 N, (HOCH SUB2 CH SUB2) SUB3 N, OR PYRIDINE SHOWED THAT THE THIOAMIDATION RATE AND MAX. DEGREE OF CONVERSION OF CN GROUPS DEPENDED ON THE AMINE BASICITY AND TEMP. THE THIOAMIDATION RATE AND DEGREE OF CONVERSION WERE HIGHER IN ME SUB2 SO THAN IN HCONME SUB2. THE REACTION GAVE ACRYLONITRILE THIOACRYLAMIDE COPOLYMERS CONTG. 50-5PERCENT CSNH SUB2 GROUPS. FACILITY: MOSK. TEKST. INST., MOSCOW, USSR.

1/2 012 UNCLASSIFIED PROCESSING DATE--23OCT70

TITLE--CARBONATION OF CALCIUM METASILICATE IN A FOAM APPARATUS. II. ABSORPTION OF CARBON DIOXIDE BY CALCIUM METASILICATE PULP UNDER FOAM

AUTHOR-(02)-SAFARYAN, M.A., GABRIYELYAN, R.S.

COUNTRY OF INFO--USSR

SOURCE--ARM. KHIM. ZH. 1970, 23(1), 78-84

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--GAS ABSORPTION, CARBON DIOXIDE, CALCIUM COMPOUND, SILICATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0800 STEP NO--UR/0426/70/023/001/0078/0084

CIRC ACCESSION NO--AP0119707

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--23OCT70

2/2 012

CIRC ACCESSION NO--AP0119707

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ABSORPTION OF CO SUB2 BY CA METASILICATE PULP DURING ITS CARBONATION IN A FOAM APP. RECENTLY DESCRIBED (S. AND G., 1969) WAS DEPENDENT UPON THE FOLLOWING PHYSICOCHEM. AND HYDRODYNAMIC PARAMETERS: CONCN. OF CO SUB2 IN GASEOUS PHASE, RATIO OF LIQ. AND SOLID PHASE IN CARBONATED CA METASILICATE PULP, TEMP., LINEAR GAS VELOCITY IN A FOAM APP., INITIAL CONCN. OF CO SUB3 PRIME2 NEGATIVE IONS IN THE PULP, AND HEIGHT OF FOAM IN THE APP. EMPIRICAL EQUATIONS ARE GIVEN FOR THE CALCN. OF DEPENDENCE OF ABSORPTION EFFICIENCY OF CO SUB2 IN PULP ON THE ABOVE MENTIONED PARAMETERS. FACILITY: INST. OBSHCH. NEORG. KHIM., EREVAN, USSR.

UNCLASSIFIED

USSR UDC 542.91+547.752

GABRIYELYAN, G. YE., and PAPAYAN, G. L., Institute of Fine Organic Chemistry Imeni A. L. Mndzhoyan, Academy of Sciences Armenian SSR (Yerevan)

"Indole Derivatives. XXXVII. Synthesis of Indole Compounds Containing a Furane Cycle"

Yerevan, Armyanskiy Khimicheskiy Zhurnal, Vol 26, No 9, 1973, pp 768-774

Abstract: Ethyl ester of 5-methoxy-3-(α-furyl)indole-2-carboxylic acid has been synthesized as well as its hydrazide, 1-benzyl derivative and corresponding acids, aminoesters, acyl derivatives, etc. with the goal of studying their biological properties. The synthesis was based on the reaction of furfurylacetoacetic ester with the diazonium salt of p-anisidine followed by Fisher cyclization of the hydrazone obtained to yield the indole product. No biological data are reported.

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USSR

UDC: 624.012:539.4

GABRUSENKO, V.V. and SASONKO, L.V.

"Reinforced Concrete Structures With Transversally Bent Prestressed Bars"

Novosibirsk, Sb. Nanch.-Tekhn. Konf. Posvyashch. 50-letiyu SSSR (Symposium of Scientific-Technical Conference on 50th Anniversary of USSR), Novosibirsk Institute of Railroad Engineers,1972, p 253 (from Referativnyy Zhurnal-Mekhanika, 1973, Abstract No 2V877)

Translation: Reduction of weight and increase of reliability of concrete structure with heat reinforcing bars can be achieved by two-directional prestressing of support sections. The use of bent prestressed bars in 3x12 m covering slabs reduces by 50% the principal tension stresses, as shown by computer calculations, makes it possible to eliminate the upper layer of bars and reduce the amount of concrete in support sections. The amount of steel is reduced by 11-20%, concrete by 8-10%, total cost reduction 6-11%. With gable beams of 18 to 24 m span, it is possible to either use partial bending, reducing the amount of bars by 18%, or to bend all bars and recess the concrete, reducing the cost by 9.7%.

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GABRYUK, V. I.

Velocity of Stationary Motion Mechanics

ON THE CRITICAL VELOCITY OF STATIONARY MOTION

Article by V. A. Svetlitskiy and V. I. Gabryuk, Kiev, Prikladnaya Mekhanika, Russian, Vol 2, no 6, 1966, pp 133-[illegible]

This article deals with an investigation of the conditions of existence of stationary motion by a closed-loop filament in a viscous medium.

The study derives the complete system of first integrals for the problem of stationary motion of a closed flexible filament in a viscous medium. Using as an example the solution to a particular boundary value problem, the critical value of the velocity of longitudinal filament motion is established. The outcome of experimental studies of the critical velocities is provided.

The investigated system comprises the flexible closed filament 1, passing around pulley 2 in Figure 1. When the pulley revolves at an angular velocity ω, the filament moves longitudinally at a velocity v equal to ωR, where R is the pulley radius.

Depending on the location of the pressing roller 3, the filament can be driven at any angle to the horizontal. Roller 3 is needed to stabilize the circuit's motion. The filament configuration depends appreciably on the velocity of its longitudinal motion.

As the experiments show, the reduction of the velocity of longitudinal filament motion has a limit below which stationary motion is impossible.

In this study, using the example of a boundary value problem solution, it is shown that the critical velocity will be the velocity corresponding to the per unit aerodynamic resistance force equaling the per unit filament weight. The experimental curves shown confirm this assertion.

The differential equations of stationary filament motion in the Cartesian system XOY, with the Y-axis extending in the direction of the gravity field (see Figure 1), have the form

1/2 022 UNCLASSIFIED PROCESSING DATE--27NOV70

TITLE--ELECTROCHEMICAL FLOW RATE SENSOR FOR A CONDUCTING LIQUID -U-

AUTHOR-(02)-NIGMATULLIN, R.SH., GABSALYAMOV, G.G.

COUNTRY OF INFO--USSR

SOURCE--PRIB. SIST. UPR. 1970, (3), 27-9

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--FLOW RATE, PLATINUM ELECTRODE, ELECTROCHEMISTRY, FERRICYANIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3006/0912 STEP NO--UR/0445/70/000/003/0027/0029

CIRC ACCESSION NO--AP0134641
UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--27NOV70
CIRC ACCESSION NO--AP0134641
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A SENSOR WAS DESIGNED FOR LOW FLOW RATES OF CONDUCTING LIQS. IT IS BASED ON THE DEPENDENCE OF THE DIFFUSION CURRENT OF THE DEPOLARIZER ON THE RATE OF FLOW OF THE LIQ. TO THE ELECTRODE, AS DESCRIBED BY THE LEVICH EQUATION. THE APP. CONSISTS OF 2 SMOOTH PT ELECTRODES AND A CIRCUIT COMPRISING A SOURCE OF CURRENT AND THE USUAL MEASURING UNITS. IN SOLNS. CONTG. (FE(CN) SUB6) SUB4 PRIME NEGATIVE, THE SENSOR CHARACTERISTICS WERE DETD. IN THE REGION 0-1.5 M-SEC AND COMPARED TO THEORY. GOOD AGREEMENT WAS OBTAINED.

UNCLASSIFIED

AA0046396 GABYSHEV, V. G.

Soviet Inventions Illustrated, Section II Electrical, Derwent, UR 0482

242248 WAVEGUIDE PORT for UHF consisting of a ceramic block (1) of a thickness equal to half a wavelength, and two compensating ceramic rods placed in close proximity to block (1) parallel to the wide wall of the waveguide. The construction increases the width of transmission.

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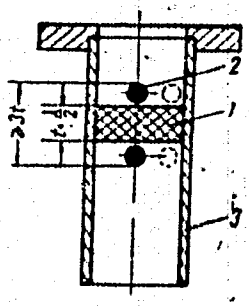

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27.6.67 as 1167567/26-25.R.N.TUMAKOVA et al.(16.9.69)
Bul 15/25.4.69. Class 21a[4] Int.Cl. H 01 p.

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19781584

AA0046396

AUTHORS: Tumakova, R. N.; Reva, V. I.; Kostyurgin, Ye. A.; Gabyshev, V. G.

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19781585

1/2 016 UNCLASSIFIED PROCESSING DATE--11DEC70

TITLE--CHARACTERISTICS OF THE RIBOSE CONTAINING COMPONENT OF DNA PREPARATIONS ISOLATED FROM RAT LIVER MITOCHONDRIA -U-

AUTHOR-(05)-GAYTSKHOKI, V.S., GACHAVA, M.M., KAZAKOVA, T.B., MARKOSYAN, K.A., RAKHIMBEKOVA, L.S.

COUNTRY OF INFO--USSR

SOURCE--BIOKHIMIYA 1970, 35(2), 336-42

DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--MITOCHONDRION, LIVER, TISSUE PHYSIOLOGY, DNA, CHROMATOGRAPHY, PHYSICAL CHEMISTRY PROPERTY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3007/0282 STEP NO--UR/0218/70/035/002/0336/0342

CIRC ACCESSION NO--AP0135778

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--11DEC70

CIRC ACCESSION NO--AP0135778

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DNA PREPNS. FROM RAT LIVER MITOCHONDRIA AND MITOCHONDRIAL MEMBRANES CONTAINED A CONSIDERABLE QUANT. OF RNA RESISTANT TO RNASE. TREATMENT OF DNA WITHRNASE I AND POLYNUCLECTIDE, PHOSPHORYLASE AND HEAT DENATURATION OF DNA FOLLOWED BY RNASE I TREATMENT DID NOT COMPLETELY REMOVE THE BOUND RNA. DURING DNA CHRCMATOG. CN METHYLATED ALBUMIN KIESELGUHR COLUMNS PART OF THE RNA IS ELUTED AS A SEP PEAK, AND THE REMAINDER IS ELUTED WITH THE DNA AND SHOWS SENSITIVITY TO RNASE. DNA IS COMPLETELY REMOVED FROM THE RNA BY CENTRIFUGING THE CHROMATOGRAPHED DNA PREPNS. IN A D. GRADIENT OR BY GEL FILTRATION ON SEPHADEX G 200 FOLLOWING TREATMENT WITH RNASE AND PRONASE. THIS RNA, PARTICULARLY THE LOOSELY BOUND FRACTION SEPD. FROM THE DNA DURING CHRCMATOG., POSSESSES TEMPLATE ACTIVITY WHICH SIGNIFICANTLY EXCEEDS THAT OF EQUIV. QUANTS. OF THE TOTAL MITOCHONDRIAL RNA.

FACILITY: LAB. BIOCHEM. GENET., INST. EXPTL. MED., LENINGRAD, USSR.

UNCLASSIFIED

USSR

UDC 547.412+661.718.1

KOZLOV, E. S., GAYDAMAKA, S. N., SOYFER, G. B., GACHEGOV, YU. N., and GORIEYEV, A. D., Institute of Organic Chemistry, Academy of Sciences Ukraine SSR and Perm State University

"Stereochemistry of the Trichloromethyl Derivatives of Pentavalent Phosphorus"

Leningrad, Zhurnal Obshchey Khimii, Vol 42 (104), Vyp 4, 1972, pp 756-759

Abstract: Nuclear magnetic resonance -- in particular the P-Cl, N^{15}-H, and C-Cl interactions -- was used to determine the geometry of (trichloromethyl)-tetracholorophosphorus (I), bis(tricholoromethyl)trichlorophosphorus (II), and bis(tricholormethyl)amidodicholorophosphorus (III). Spectra were taken at 77°K and 300°K. The distribution and intensity of the peaks indicate a covalent bipyramidal structure, the trichloromethyl group occupying an axial position. The nature of the hybridization of the nitrogen in III was determined from the value of the spin-spin interaction $J(N^{15}-H)$: $\%S = 0.43J(N^{15}-H)-6$.

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USSR UDC 547.814'753.07

DZHAPARIDZE, K. G., MAISURADZE, D. P., GACHECHILADZE, G. G., and GOMELAURI, E. S., Institute of Cybernetics, Acad. Sc. Georgian SSR, Tbilisi

"Synthesis and Some Physico-Chemical Properties of 6-Nitro-2H-Chromen-2-Spiro-2'-N-Alkyl-3',3'-dimethylindolines"

Riga, Khimiya Geterotsiklicheskikh Soyedineniy, No 6, Jun 71, pp 775-777

Abstract: Indoline spirochromenes (spiropyrones) with various alkyl substituents on the nitrogen atom were synthesized. Two grams of 2,3,3-trimethylindolenine alkyl iodide was decomposed with 5% aqueous base. The oil formed was extracted with ether, washed with water, ether was evaporated and the residue dissolved in ethanol. To this solution an equimolar quantity of 5-nitrosalicylaldehyde was added and refluxed for 2 hrs. After cooling, the pure product crystallized. Most of the compounds synthesized in this fashion were photochromic in the crystalline state. This phenomenon increased with increased length of the alkyl radical, due to better packing of the molecules in crystalline lattice. The melting point dropped as the chain of alkyl substituents increased in length.

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USSR

GACHECHILADZE, T. G., TSILOSANI, T. P.

"One Method of Studying the Statistical Structure of Text"

Statistika Rechi i Avtomatich. Analis Teksta [Speech Statistics and Automatic Text Analysis -- Collection of Works], Leningrad, Nauka Press, 1971, pp 113-133, (Translated from Referativnyy Zhurnal, Kibernetika, No 3, 1972, Abstract No 3 V613 by N. Arapova).

Translation: The statistical distribution F(i) of word lengths (i is the length of the word) in text is described. A word refers to a sequence of characters between two spaces (in the examples presented, i is the length of the word in letters, the distance in number of words between two labeled members of a sentence). It is assumed that the process of "word formation" is superposition of an absolutely deterministic and absolutely random processes, which can both be described in the framework of the so-called generalized Fuchs model studied in earlier works by the author's. This work presents a method for determination of the deterministic components by experimental methods, i.e., determination of the sets of constants, called the ε spectrum. The value of F(i) theoretically found with various interpretations of i is compared with the experimental data for the Georgian language.

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UDC 530.145

USSR

GACHECHILADZE, T. G.

"Information Properties of a Quantum Harmonic Oscillator"

Tr. Tbilissk. un-ta (Works of Tbilissi University), 1970, Vol 135, pp 7-51 (from RZh-Fizika, No 1, Jan 71, Abstract No 1B28)

Translation: A generating function of Hermite polynomials is used to construct a convenient representation for the Wigner phase distribution function $W_n(p, q)$, where n is the index of the state of the quantum oscillator. It is shown that the average value in the state n of any physical quantity expressed in the form of a function of the canonical variables p and q is written in terms of the vacuum averages:

$$\langle g(p, q) \rangle_n = \int\int dp dq g(p, q) W_n(p, q) =$$

$$= \sum_{k=0}^{n} (-1)^k \frac{2^{2(n-k)} n!}{[(n-k)!]^2 k!} \left(\frac{1}{n\omega}\right)^{n-k} \langle H^{n-k}(p, q) g(p, q) \rangle_0.$$

The time evolution of the phase distributions is considered. The validity of the Liouville theorem is checked in particular. A theory of a perturbed oscillator is

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USSR

GACHECHILADZE, T. G., Tr. Tbilissk. un-ta, 1970, Vol 135, pp 7-51

then constructed which makes it possible to solve problems in quantum mechanics without solving the Schrodinger equation. The principles of maximum entropy and minimum distinguishing information are discussed. It is emphasized that the latter is much more convenient to use for continuous distributions. Both principles are applied to a linear oscillator. The possibility of negative values of the function $W_n(p, q)$ which cannot be interpreted as real probabilities is noted. This difficulty is lessened if it is taken into account that the phase distributions contain more information than is required for a comparison with experiments. G. G. A.

USSR

UDC 595.771-152(571.51)

GORNOSTAYEVA, V. M. and GACHEGOVA, T. A., Entomology Department, Institute of Medical Parasitology and Tropical Medicine imeni Ye. I. Martsinovskiy, Ministry of Health USSR

"Discovery of the Breeding Places of the Biting Midge Lasiohelea sibirica Bujanova"

Moscow, Meditsinskaya Parazitologiya i Parazitarnyye Bolezni, No 5, 1971, pp 621-622

Abstract: Lasiohelea sibirica Bujanova from the environs of Krasnoyarsk was described in 1962 by Bujanova as a new species of the world fauna. It is now found in Permskaya Oblast, along the upper Lena River, and in the Ukraine. In 1970 the authors found two L. sibirica larvae and six eggs near the construction site of the Sayano-Shushenskaya Hydroelectric Power Plant. Five eggs were found among leaves and sandy soil in cracks between stones. The sixth egg was found in leaves under a bush in deep shade. The samples containing the eggs and larvae were taken alongside a stream that empties into the Yenisei.

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USSR UDC:547.639

AGRACHEVA, Ye. B., and GACHKOVSKIY, V. F., Moscow Institute of Textiles and Institute of Chemical Physics, Academy of Sciences USSR

"Luminescence of Azomethine Salts"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 1, Jan 70, pp 191-194

Abstract: A series of 33 azomethine hydrochlorides were prepared for the study of their visible luminescence characteristics. The corresponding azomethines with a non-rigid skeleton exhibited only a weak luminescence or none at all, while the above hydrochlorides showed a greatly enhanced, sometimes fairly intensive, luminescence. The increase in luminescence intensity caused by salt formation, which was previously observed by the authors in the azine series, may be explained by the increase in molecular coplanarity. Analytical data, melting points, color, relative luminescence intensity, and wave lengths of luminescence peaks (533-694 nm) were tabulated. The maximum luminescence intensity was exhibited by N-(para-methoxy)-benzal(para-carbethoxy) aniline monohydrochloride. The remarkable aptitude of some of the azomethines studied to combine with 2-4 moles hydrochloric acid was not completely explained. Formation of the double salt type complexes was presumed to be the most likely mechanism of salt formation, which depends on the polarity of the salt.
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USSR UDC 547.574

KOZLOV, N. S., PAK, V. D., GACHKOVSKIY, V. F., and BALYKOVA, I. A., Perm' Agricultural Institute imeni D. N. Pryanishnikov, Perm', and Institute of Chemical Physics, Academy of Sciences USSR

"Synthesis and Properties of Monophenyl- and Monoalkylphosphite Ammonium Complexes of Arylidenebutylamines"

Leningrad, Zhurnal Obshchey Khimii, Vol 43, No 11, Nov 73, pp 2497-2500

Abstract: The reaction of arylidenebutylamines RC_6H_4-CH=N-C_4H_9 with diphenyl and dialkyl phosphites proceeded in one direction only, leading to the formation of monophenyl- and monoalkylphosphite ammonium complexes of azomethines $(RC_6H_4-CH=\overset{+}{N}H-C_4H_9)\bar{O}-P(OR')(OH)$ (I; R = H, p-MeO, p-Me_2N, p-Cl, p-Br, p-NO_2; R' = Ph, Me, Et, Pr, i-Pr, Bu). The compounds I were crystalline substances with m. p. 192-233°. The spectra of their luminescence induced by radiation with a wavelength in the region of 365 nm were determined. It had been established in earlier work by Kozlov et al that the reaction of arylidenemethylamines with esters $(R'O)_2POH$ (R' = Ph or alkyl) could result in the formation of either aminophosphonic esters or of monophenyl- and monoalkylphosphite ammonium complexes of azomethines.

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USSR

UDC 541.6 + 535.7

GACHKOVSKIY, V. F., Institute of Chemical Physics, Ac. Sc. USSR

"Universal Luminescence of Polymers. VI. Basic Laws of the Luminescence Method for Studying Structural Changes in Polymers"

Moscow, Zhurnal Strukturnoy Khimii, Vol 11, No 6, Dec 70, pp 1072-1075

Abstract: This is a review with 12 references. The "universal" luminescence is cited as one characteristic which could be used in studying structural changes of polymers, which are reflected by kinetic functionality of their luminescence spectra. Several kinetic functions are reproduced for various structural modifications.

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1/2 011 UNCLASSIFIED PROCESSING DATE--23OCT7C

TITLE--OXIDIZING REACTIONS USING MAGNESIUM PHTHALOCYANINE AND CHLOROPHYLL AS CATALYSTS -U-

AUTHOR--GACHKOVSKIY, V.F.

COUNTRY OF INFO--USSR

SOURCE--ZH. FIZ. KHIM. 1970, 44(2), 384-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--PHTHALOCYANINE, MAGNESIUM COMPOUND, CHLOROPHYLL, CATALYTIC OXIDATION, NONMETALLIC CATALYST

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/2013 STEP NO--UR/0076/70/044/002/0384/0389

CIRC ACCESSION NO--AP0120656

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--23OCT7(

CIRC ACCESSION NO--AP0120656

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE SLOW DARK REACTION OF MOL. O WITH PHTHALOCYANINE MOLS. ABSORBED ON MGO TO FORM A PRODUCT WITH A FLUROESCENCE SPECTRUM HAVING LAMBDA SUBMAX. 684 NM TAKES PLACE ONLY IN THE ABSENCE OF H SUB2 O VAPOR. A MECHANISM FOR THE REACTION OF AN OXYGENATED COMPLEX WITH H SUB2 O IS PROPOSED. AN ANALOGOUS REACTION PROBABLY OCCURS WITH CHLOROPHYLL. FACILITY: INST. KHIM. FIZ., MOSCOW, USSR.

UNCLASSIFIED

1/2 020 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--STRUCTURE AND LUMINESCENCE OF P,(SALICYLIDENEAMINO) BENZOIC ACID ESTERS WITH AN ADDITIONAL ELECTRON DONOR GROUP IN THE ALDEHYDE COMPONENT

AUTHOR-(03)-SMIRNOV, YE.A., AGRACHEVA, YE.B., GACHKOVSKIY, V.F.

COUNTRY OF INFO--USSR

SOURCE--ZH. OBSHCH. KHIM. 1970, 40(2), 375-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

TOPIC TAGS--MOLECULAR STRUCTURE, LUMINESCENCE, SALICYCLIC ACID, BENZOIC ACID, BENZENE DERIVATIVE, AMINE DERIVATIVE, ESTER, AZO COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1961 STEP NO--UR/0079/70/040/002/0375/0379

CIRC ACCESSION NO--AP0112927
UNCLASSIFIED

2/2 020 UNCLASSIFIED PROCESSING DATE--16OCT70

CIRC ACCESSION NO--AP0112927

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INTRODUCTION OF HO OR MEO AS ELECTRON DONOR GROUPS INTO THE 4 OR 5 POSITIONS OF THE ALDEHYDE PART OF P,(SALICYLIDENEAMINO)BENZOICACID LOWERS THE INTENSITY OF LUMINESCENCE GREATLY, OWING TO THE CHANGE OF QUASIQUINOID STRUCTURE OF MOST ESTERS OF THIS ACID INTO THE BENZENOID STRUCTURE CAUSED BY SUCH A GROUP. THE LUMINESCENCE CHARACTERISTICS WERE TABULATED FOR THE AZOMETHINES WHICH WERE PREPD. BY 2 HR HEATING EQUIMOLAR AMTS. ALDEHYDES AND P,AMINOBENZOIC ACID ESTERS IN ETOH OR PROH. THE FOLLOWING I WERE REPORTED (SHOWN ON MICROFICHE). FACILITY: MOSK. TEKST. INST., MOSCOW, USSR.

UNCLASSIFIED

1/2 013 UNCLASSIFIED PROCESSING DATE--20NOV70
TITLE--ACTIVITY OF MAGNESIUM PHTHALOCYANINE ADDEND BINARY COMPLEXES ADSORBED ON MAGNESIUM OXIDE -U-
AUTHOR--GACHKOVSKIY, V.F.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(6), 1370-3

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--MAGNESIUM COMPOUND, PHTHALOCYANINE, COMPLEX COMPOUND, MAGNESIUM OXIDE, ABSORPTION SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

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116457v Luminescence of azomethine salts. Agracheva, E. B.; Gachkovskii, V. F. (Mosk. Tekst. Inst., Moscow, USSR). *Zh. Obshch. Khim.* 1970, 40(1), 191–4 (Russ). The luminescence of azomethines with a non-rigid skeleton is greatly enhanced by salt formation owing to increased mol. coplanarity. The salt formation may involve up to 4 moles HCl. The luminescence characteristics are reported for *p*-$RC_6H_4CH{:}NC_6H_4R^1$-*p*nHCl (R, R^1 and n given): H, H, *1*; H, Me_2N, *1*; H, Me_2N, *2*; Me_2N, H, *1*; Me_2N, H, *2*; Me_2N, H, *3*; Me_2N, CO_2H, *2*; Me_2N, CO_2H, *4*; Me_2N, CO_2Me, *1*; Me_2N, CO_2Me, *2*; Me_2N, CO_2Et, *1*; Me_2N, CO_2Et, *2*; Me_2N, CO_2Pr, *1*; Me_2N, CO_2Pr, *2*; Me_2N, CO_2Bu, *1*; H, HO, *1*; HO, H, *2*; HO, HO, *2*; H, MeO, *1*; MeO, H, *1*; MeO, MeO, *1*; HO, CO_2H, *3*; MeO, CO_2H, *2*; HO, CO_2Me, *2*; MeO, CO_2Et, *1*; Me_2N, NO_2, *1*; HO, NO_2, *2*; MeO, NO_2, *2*; NO_2, HO, *1*; O_2N, MeO, *1*; O_2N, Me_2N, *1*.

G. M. Kosolapoff

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REEL/FRAME
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USSR

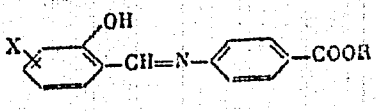
UDC: 547.574 - 576

SMIRNOV, YE. A., AGRACHEVA, YE. B., and GACHKOVSKIY, V. F., Moscow Textile Institute, Moscow, Ministry of Higher and Secondary Specialized Education RSFSR, and Institute of Chemical Physics, Moscow, Academy of Sciences USSR

"Structure and Luminescence of Salicylidene-p-aminobenzoic Acid Esters With Additional Electron-Donor Group in Aldehyde Component"

Leningrad, Zhurnal Obshchey Khimii, Vol 40, No 2, Feb 70, pp 375-379

Abstract: The authors undertook to ascertain how luminescence intensity is affected by the introduction of typical electron-donor groups (H, OCH_3) into the nucleus of the aldehyde component of salicylidene-p-aminobenzoic acid esters. Four series of compounds were synthesized for this purpose, corresponding to the general formula



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USSR

SMIRNOV, YE. A., et al., Zhurnal Obshchey Khimii, Vol 40, No 2, Feb 70, pp 375-379

Series A: X = 4-OH; series B: X = 5-OH; series C: X = 4-OCH_3; series D: X = 5-OCH_3. R = alkyls of normal structure from C_1 to C_8 inclusive.

It was found that introduction of an additional electron-donor group into position 4 or 5 of the aldehyde component results in a sharp decrease in luminescence intensity. It is suggested that the principal reason for this is the transformation of the quasiquinoid structure characteristic of most esters of salicylidene-p-aminobenzoic acid into a benzenoid structure.

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USSR

UDC: 621.317.7

GLUKHOV, A. A., GADAKAYEV, V. V.

"Analyzer of Pauses in Stochastic Signals"

V sb. Radioelektron. v nar. kh-ve SSSR, Ch. 2 (Radioelectronics in the National Economy of the USSR, Part 2--collection of works) Kuybyshev, 1970, pp 365-376 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3A344)

Translation: The described analyzer of the pause distribution in stochastic signals consists of a discriminator of pause lengths, in the form of a Schmitt oscillator, involving a semiconductor triode, and a load in the form of an emitter follower, together with a device for counting the duration of the pauses. The measurement error is less than ±10%. The frequency range is 50 to 10,000 Hz. The minimum pause duration analyzed is 5 μs. The instrument is particularly applicable to controlling broadcasting operations. Four illustrations, one table. N. S.

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UDC 51

USSR

GADALOV, V. V., KOSTIN, V. B., and DUNAYTSEVA, G. V.

"Optimizing the Process of Developing Electronic Circuits With Tie-Ins to Cost, Time, and Technical Parameters"

V sb. Probl. sistemotekhniki (Problems in System Engineering--collection of works) "Sudostroyeniye," 1972, pp 65-76 (from RZh--Matematika, No 10, 1972, Abstract No 10V603)

Translation: The problem reduces to a linear programming problem with two-sided limits on the variables.

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USSR

UDC: 51:621.391

GADALOV, V. V., KOSTIN, V. B., DUNAYTSEVA, G. V.

"Concerning the Problem of Optimizing the Process of Developing Radio Electronic Systems With Coordination of Cost, Time and Engineering Parameters"

Probl. sistemotekhniki--sbornik (Problems of Systems Analysis--collection of works), vyp. 1, n.p., "Sudostroyeniye", 1972, pp 65-76 (from RZh-Kibernetika, No 10, Oct 72, abstract No 10V603)

Translation: The problem is reduced to a problem in linear programming with bilateral restrictions on the variables.

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USSR

UDC 620.193.3

KASHCHEYEVA, T. P., DUBIKHINA, V. S., GADASINA, L. YU., MESHCHERYAKOVA, I. D., and RUTKOVSKIY, M. L.

"Effect of Oxidizers on Corrosion and Electrochemical Behavior of Nickel-Molybdenum Alloy EP-496 in Hydrochloric Acid"

Moscow, Zashchita Metallov, Vol 7, No 1, Jan-Feb 71, pp 11-15

Abstract: The article describes results of a study of the effect of oxygen and ferric chloride on the corrosion resistance of nickel-molybdenum alloy EP-496 (28 percent Mo, 70 percent Ni, 1.5 percent V, 4 percent Fe) in concentrated (22 percent) hydrochloric acid saturated with air or nitrogen at P = 1 atm and a temperature of 20° and 100°, for purposes of determining conditions for the applicability of the alloy in the production of organosilicon liquids. It was found that the corrosion rate in air-saturated hydrochloric acid is 7 times greater than in deaerated hydrochloric acid; in aerated hydrochloric acid in the gaseous phase the corrosion rate is 2 times greater than it is in the liquid phase. A similar difference was observed under production conditions, particularly in the production of organosilicon liquid GKZh-94. It is shown that the corrosion rate of alloy EP-496 is determined primarily by the depolarizer concentration and the rate at which

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KASHCHEYEVA, T. P., et al., Zashchita Metallov, Vol 7, No 1, Jan-Feb 71, pp 11-15

it is supplied to the corroding surface. In using the alloy as a construction material particular attention must be given to the absence of oxidizers. Iron impurities cannot be tolerated in concentrated HCl at high temperatures.

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USSR UDC 539.3

ROMANOV, A. N., GADENIN, M. M., Moscow

"Study of Process of Deformation with Low-Cycle Loading"

Problemy Prochnosti, No 11, 1971, pp 10-15.

ABSTRACT: The changes in true stresses and deformations are studied during cyclical, quasistatic rupture of softening, hardening and stabilizing materials. It is demonstrated that the true deformations and stresses may differ considerably from the conditional stresses usually used to perform calculations. It is established that the intensity and duration of hardening, softening and stabilization are determined, on the one hand, by the plastic properties of the material, and on the other hand, by the loading conditions. The intensity of hardening depends on the value of the fraction $(\sigma_b - \sigma_{0.2})/\sigma_b$, while the type of material (hardening, softening or stabilizing) depends on the ratio of even elongation corresponding to σ_b to the total static elongation.

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1/2 050 UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--MEASUREMENT OF THE ELECTRON TEMPERATURE IN A BEAM PLASMA DISCHARGE LASER ON THE BASIS OF THE BREMSSTRAHLUNG X RADIATION SPECTRUM -U-

AUTHOR-(05)-GADEISKIY, M.P., BULOTIN, L.I., TKACH, YU.V., BESSARAB, YA.YA., MAGDA, I.I.

COUNTRY OF INFO--USSR

SOURCE--UKRAINS'KII FIZICHN II ZHURNAL, VOL. 15, APR. 1970, P 662-664

DATE PUBLISHED----APR70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MEASUREMENT, ELECTRON TEMPERATURE, LASER, BREMSSTRAHLUNG, X RADIATION, PLASMA DISCHARGE, PLASMA BEAM, POPULATION INVERSION, RADIATION SPECTRUM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

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2/2 050 UNCLASSIFIED PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AP0128195

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE PARAMETERS OF A HIGH ENERGY GROUP OF PLASMA ELECTRONS IN A LASER BASED ON A BEAM PLASMA DISCHARGE. THIS GROUP ARISES DUE TO THE ACCELERATION OF ELECTRONS BY HIGH FREQUENCY FIELDS EXCITED IN THE PLASMA. THE TEMPERATURE OF ELECTRONS IN THE GROUP IS MEASURED BY THE SPECTRUM OF THE BREMMSTRAHLUNG X RADIATION TO BE BETWEEN 0.8 AND 1 KEV, WHILE THE NUMBER OF CONSTITUENT PARTICLES IS 10 BILLION PER CU CM, AS MEASURED BY THE ABSOLUTE INTENSITY OF X RAY EMISSION. THE TEMPERATURE AND DENSITY ARE SUFFICIENT FOR CRITICAL POPULATION INVERSION IN THEPULSED MODE OF OPERATION OF THE LASER. FACILITY: AKADEMIIA NAUK UKRAINS'KOI RSR, FIZIKO-TEKHNICHNII INSTITUT, KHARKOV, UKRAINIAN SSR.

UNCLASSIFIED

USSR UDC: A621.3.014.2

LEMBERG, Ye. A., TKACH, Yu. V., MAGDA, I. I., GADETSKIY, N. P., and ABRAMOVICH, V. U.

"Switching Dischargers With a Pulsed Gas Laser in the Ultraviolet Range"

Moscow, Pribory i tekhnika eksperimenta, No 1, 1973, pp 140-142

Abstract: The use of a nitrogen gas laser operating at a wavelength of 3371 Å in the control of an air discharger is investigated in this experimental paper. A simplified diagram is given of the experimental equipment together with a curve of the discharger operation as a function of the voltage across its electrodes, and an oscillogram of the current pulses from two dischargers connected by a constant delay circuit. The power of the laser was 25-30 kW at a pulse duration of 10 nsec, and the laser was pumped by an oscillator of the Arkad'yev-Marks circuit producing a pulse with a steep leading edge. The experiments involved tests of dischargers using various types of electrode metals -- Cu, Zn, and Mo -- with the laser radiation focused by a quartz lens on the electrode with the negative potential. Synchronization of two identical dischargers by the laser beam was also investigated. The authors thank S. I.

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USSR UDC: 621.3.014.2

LEMBERG, Ye. A., et al, Pribory i tekhnika eksperimenta, No 1, 1973, pp 140-142

Bolotin and Ya. B. Faynberg for their interest and their comments.

USSR

UDC: None

TKACH, Yu. V., FAYNBERG, Ya. B., BOLOTIN, L. I., BESSARAB, Ya. Ya., GADETSKIY, N. P., MAGDA, I. I., and SIDEL'NIKOVA, A. V.

"Laser Using Plasma-Beam Discharge"

Moscow, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62, No 5, 1972, pp 1702-1716

Abstract: Experiments to investigate the generation of stimulated radiation in the visible range of the spectrum are described. In the equipment described in this paper a pulsed electron beam with a pulse width of 90 μs at a current of 35 amp and an energy of up to 40 kev was injected into a stainless steel plasma chamber with a diameter of 110 mm and a length of three meters. At the end of the chamber a water-cooled collector was placed for dissipating the beam power, reaching a level of as much as 1.5 kW. A block diagram of the equipment and an explanation of its operation given. These experiments demonstrated the possibility of using collective processes in a high-temperature plasma for pumping gas lasers; it is asserted, in fact, that this type of pumping in a plasma-beam discharge is best for obtaining oscillation in the shortwave end of the visible range. The authors, members of the Physico-Technical Institute of the Ukrainian Academy of Sciences, express

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USSR

UDC: None

TKACH, Yu. V., et al, Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, vol 62, No 5, 1972, pp 1702-1716

their gratitude to V. P. Tychinskiy, V. V. Slezov, V. D. Shapiro, and V. I. Shevchenko for their comments and advice.

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GADETSKIY, P.P.

(5)

NKS 59 77
1 Aug 73

UDC 621.3.018.2

USING PULSED ULTRAVIOLET-WAVEBAND GAS LASERS TO SWITCH SPARK GAPS

[Article by Ye.A. Lembers, Yu.V. Tkach, I.I. Harda, P.P. Gadetskiy, and V.U. Abramovich; Moscow, Pribory i Tekhnika Eksperimenta, Russian, No 1, January 1973, pp 140-142]

Two air spark gaps could be ignited at a frequency of 15-20 hertz using a pulsed ultraviolet molecular nitrogen laser generating radiation with wavelength 3,371 Å and power 30 kw. The breakdown synchronization attained was not worse than ±1 nsec. The dependence of the time of laser-initiated spark gap activation on the voltage applied is shown for various spark gap lengths.

The possibility of controlling an air spark gap by a nitrogen gas laser with a generation wavelength of 3,371 Å is investigated in this paper. The gap is activated by distortion of the space charge field by photoelectrons emitted upon irradiation of the electrodes by quanta possessing an energy level close to the photoionization threshold. Although the probability of photoelectron emission is lower in this case than in experiments with shorter wavelength radiation, nevertheless since coherent radiation is employed a greater photon density can be created which compensates for the reduced number of photoelectrons.

Experiments were conducted with the setup diagrammed in Figure 1. The nitrogen laser's generation power attained 25-30 kw with a pulse length of 10 nsec. Pumping was performed by a generator producing a very steep pulse front assembled on the basis of an Arkad'yev-Marks circuit. A system of compensating capacitors was used to reduce pulse rise time

USSR UDC 629.735.33.015.3.025.35

GADETSKIY, V. M., SEREBRIYSKIY, YA. M., FOMIN, V. M.

"Study of the Effect of Eddy Generators on Suppression of the Turbulent Boundary Layer"

Uch. zap. Tsentr. aero-gidrodinam. in-ta (Scientific Notes of the Central Institute of Aerodynamics), 1972, Vol 3, No 4, pp 22-28 (from RZh-Aviatsionnyye i raketnyye dvigateli,otdel'nyy vypusk, No 11, Nov 72, Abstract No 11.34.6)

Translation: Results are presented from an experimental study at nearsonic velocities of the effect of parallel and diffuser eddy generator systems on the separation of the boundary layer and the position of the shock on the half-section. There are 5 illustrations and a 2-entry bibliography.

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where u_n and v_n are a projection of the velocity vectors of the corresponding components on the x and y axes; N is the number of components, while ρ_{n0} are unperturbed values of their densities, permitting the flow of each component to be considered irrotational and accordingly the introduction of a perturbation potential for each component. The remainder of the investigation is done using operational calculus methods.

Gadion, V. N., V. G. Ivanov, G. I. Mishin, S. N. Palkin, and L. I. Skurin. Electronic and gas dynamic parameters of hypersonic wakes behind models moving in argon. ZhTF, no. 5, 1972, 1049-1055.

The conductivity, velocity, and width of hypersonic wakes behind models moving in argon were studied within a velocity range of 3300-4900 m/sec, at pressures of 30, 40, 60, 80, and 100 torr and a temperature of about 290° K. The experiments were conducted on polyethylene 8 mm cylindrical models of small elongation with spherical noses and conic skirts. Copperplated aluminum spheres 5.4 mm in diameter were used for control experiments. The models were shot into a pressure chamber provided with instrumentation for measurement of the wake conductivity and velocity. Wake velocity was measured electrodynamically and by the Toepler method.

Measurement results are presented for tests of wake conductivity at a constant pressure and variable velocity or at a constant velocity and variable pressure. The latter test results show that as the distance from the body increases, a relationship develops between the

GADION, V. N.

USSR

UDC 533.932

GADION, V. N., IVANOV, V. G., MISHIN, G. I., PALKIN, S. N., Physico-Technical Institute imeni A. F. Ioffe of the USSR Academy of Sciences, Leningrad

"Study of the Conductivity of Hypersonic Wakes on a Ballistic Device"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol XLII, No 3, 1972, pp 635-637

Abstract: Results are presented from measuring the conductivity of a hypersonic wake for model flight speeds of 3.3-6.4 km/sec and an air pressure of 40, 80 and 160 mm Hg. These data are used to calculate the electron concentration drop downstream which offers the possibility of estimating the electron concentration decrease rate. Analysis of the results shows that the decrease in electron concentration in the "hot" part of the far wake ($T > 1000^\circ$ K) is determined by the process of dissociative recombination $NO^+ + e \rightarrow N + O$, and the recombination coefficient is approximately described by the function $\alpha \approx 3 \cdot 10^{-3} T^{-3/2}$ cm^3/particle-second.

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USSR

UDC: 533+621.5:533

GADION, V. N., IVANOV, V. G., MISHIN, G. I., PALKIN, S. N., SKURIN, L. I., Physicotechnical Institute imeni A. F. Ioffe, Academy of Sciences of the USSR, Leningrad

"Investigation of the Electronic and Gas-Dynamic Parameters of a Hypersonic Wake Behind Models Moving in Argon"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, Vol 42, No 5, May 72, pp 1049-1055

Abstract: The paper presents experimental results on measurement of the conductivity, velocity and diameter of the wake behind models moving in argon at 3300-4900 m/s. The pressure in the test chamber was varied from 30 to 100 mm Hg. The models were cylinders with low aspect ratio with a spherical nose and a tapered skirt 8 mm in diameter. The test models were made from polyethylene, and control measurements were made on aluminum copper-plated spheres 5.4 mm in diameter. Taking the initial conditions of the experiment as a basis, a theoretical analysis is made of the temperature, velocity and diameter of the wake, and the electron concentration along the wake using various models of viscosity. The viscosity models are evaluated by comparing theoretical and experimental data on wakes with a length up to 500 times the diameter of the model.

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USSR UDC 539.18

GADOMSKIY, O. N., NAGIBAROV, V. R., SOLOVAROV, N. K., Kazan' State Pedagogical Institute of the Ministry of Education RSFSR

"Toward a Theory of the Radiation of Systems of Weakly Interacting Particles"

Manuscript deposited at VINITI No. 4583-72 Dep. from 12 July 1972 (from RZh-Fizika, No 10, Oct 72, Abstract No 10D7DEP)

Translation: The Hamiltonian for the interaction of a system of atoms with an external electromagnetic field, considering the delaying part of the Coulomb interaction between them, is obtained. The radiation intensity (absorption) of electromagnetic fields is calculated with the resulting Hamiltonian. It is shown that consideration of the delaying portion of the Coulomb interaction between atoms leads to the appearance of formulas for the intensity, along with the usual new terms. Numerical calculations show that consideration of the latter is especially important for the infrared region of frequencies under the condition of coherence of the exciting field. The intensity of the superradiant signals, in addition to the ordinary term $\sim N^2$, contains many terms with higher powers of N, where N is the number of atoms. The intensity of the superradiant signals of the light induction and

USSR

GADOMSKIY, O. N., et al, Manuscript deposited at VINITI No. 4538-72 Dep. from 12 July 1972

echo type was calculated with the Hamiltonian obtained. Analysis of the expression showed that under certain conditions the system of atoms, besides emitting on the basic frequency ω_{12}, can emit (absorb) detectable power on the double frequency $2\omega_{12}$, where ω_{12} is the frequency of splitting in the spectrum of the isolated atom. For $N = 2$ this corresponds to simultaneous radiation transition of both atoms to the ground (excited) state. Authors abstract.

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UDC 621.375.826

USSR

PFAYFFER, M., VERNKE, V., LAU, A., VAYGMAN, KH. I., LENTS, K., GADOV, P.

"Procedure for Separating the Weak Lines of Forced Combination Scattering by Means of Selective Absorption on the Frequency of the Strongest Stokes Component"

V sb. Kvant. elektronika (Quantum Electronics--collection of works), Moscow, No 5, 1971, pp 129-131 (from RZh-Radiotekhnika, No 1, 1972, Abstract No 1D342)

Translation: In the presence of forced combination scattering, usually only the combination scattering component with the largest amplification coefficient appears in the spectrum. Its appearance causes such strong depletion of the intensity of the exciting laser that the other combination scattering signals cannot grow to the sensitivity threshold of the receiver. By selective absorption for the predominant Stokes component it is possible to facilitate the appearance of other combination scattering frequencies. It was theoretically demonstrated that when using an absorbing liquid for which the ratio of the absorption coefficient on the frequency of the first Stokes component and on the laser frequency of 100:1 is obtained, the detection threshold of the weak component can be reduced by 7 times. The bibliography has 5 entries.

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USSR

UDC 621.315.592

GADZHIALIYEV, M.M. [Institute Of Physics, Dagestanskiy Branch, Academy Of Sciences, USSR, Makhachkala]

"Thermal EMF Of n-InAs In A Longitudinal Quantizing Magnetic Field"

Fizika i tekhnika poluprovodnikov, Vol 6, No 4, Apr 1972, pp 754-756

Abstract: Experiments were conducted concerned with the concept that in semiconductors with a degenerate electron gas, change of the thermo EMF in a longitudinal quantizing magnetic field will, for the most part, be described by a change of the electron part α^e. In order to realize the quantum limit with simultaneous conservation of the degenerate state of the electron gas, measurements were made on polycrystalline specimens of n-InAs with concentrations of current carriers of $(1 \div 2) \cdot 10^{16}$ cm^{-3} in magnetic fields up to 60 kilooersted at the temperature of liquid helium. The temperature differences in the specimens were measured by carbon resistance thermometers. The electrical signals from the specimens were fed across an amplifier to a recording instrument. The magnetoresistance, magnetothermo EMF, and Hall voltage were measured in two directions of the magnetic field. The results are shown in graph form of measurements for n-InAs with $n = 1.7 \times 10^{16}$ cm^{-3} at $T_{av} \simeq 8^\circ$ K. The author thanks R.I. Bashirov for helpful comments and interest in the work. 1 fig. 7 ref.
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